Linacre Lecture

ON

LINACRE'S INFLUENCE ON ENGLISH MEDICINE.

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[Sir George Newman began his address with an eloquent description of Florence as the centre of cultivation of learning and art, when "there came to this beautiful city of flowers and colour and song about 1485 a grave, studious, and sober-minded Englishman, Thomas Linacre."]

THE LIFE AND WORK OF LINACRE.

Linacre was born at Canterbury probably in 1460, and went to the monastery school at Christ Church, Canterbury, under the priorship of William Tilly, more commonly called Selling, from the name of the Kentish village of which he was a native. Selling was a Fellow of All Souls and an old pupil of Politian at Bologna, and as presiding monk in the Canterbury Monastery the tutor and preceptor of Linacre, who at the age of 20 was removed to Oxford. There he was elected in 1484 Fellow of All Souls, which became at that time an English home of Greek learning. Under Vitelli he studied Greek in company with Grocyn and William Latimer, and became an accomplished scholar. When Archbishop Warham appointed Selling, the Prior of Christ Church in Canterbury, as an ecclesiastical ambassador to Rome, Linacre accompanied him and by him was introduced to Politian. Whether or not he sojourned en route at Bologna, Linacre soon found himself in the midst of the Platonic Academy at Florence, patronised by Lorenzo de Medici, the companion and fellow student of his sons, Piero and Giovanni, and the pupil of Chalcondyles and Politian. We do not know the exact pursuits or studies of Linacre; we only know he stayed in Florence for more than 12 months, that he associated with the *habitués* of the Medician court, attended the Academy classes and disputations, read in the libraries, shared in the pleasures and gaieties of Florence and became intimately acquainted with Chalcondyles, Politian, and Ficino, the leaders of the Academy, and brilliant friends of Lorenzo de Medici. We cannot here enter into the scholarship and lives of these four men, but we cannot doubt that they left an enduring mark, the love of learning, upon him. It is as if he came out of the shades of scholasticism at Oxford into the sunlight of a larger life and a wider purpose. Like Saul of Tarsus on the road to Damascus, or like Mahomet on Mount Hira, he saw a new light.

From Florence Linacre, now disciple of Politian, repaired to Rome. A perusal of ancient manuscripts contained in the libraries of the capital had been one great motive of Linacre's journey. One day he was reading in the Vatican when Hermolaus Barbarus suddenly approached the place where he was seated, and introduced himself. This accidental interview began a firm and lasting friendship which was afterwards strengthened by a similarity of disposition and pursuit. Dr. Noble Johnson says that "of all the acquaintance which Linacre formed in Italy, this was perhaps the most distinguished, and the value of the friendship was enhanced by the literary celebrity of the individual with whom it was contracted." Who was Barbarus? He was born in Venice in 1454, son of a senator, grandson of a doge, and deputed envoy, and subsequently Ambassador, to Rome from the States of Venice, and who on account of services rendered was nominated by Pope Innocent VIII. to be patriarch of Aquileia. For accepting such preferment he was proscribed by his government, but was residing in Rome when Linacre arrived. Barbarus, "indifferent to worldly honours: acknowledged but two masters, Christ and letters." Above all, he was a student of scientific and medical literature, a devoted translator of Aristotle, Dioscorides, and Pliny at Padua, and held a chair in that University. He was the vigorous critic of Averroistic Aristotelianism. He died of the plague in 1494, aged 40.

On leaving Rome Linacre proceeded to Venice to seek the acquaintance of Aldus Manutius, a disciple of Aristotle, and the master printer of Greek editions, who played so large a part in the struggle between Hellenism and Arabism. From Venice Linacre went to Padua, where he first really studied practical medicine, and took the doctorate degree. Thence by Vicenza and through the Cevennes he returned to London. He is believed to have sat at the feet of the celebrated Italian physician Leonicenus during a brief sojourn at Vicenza.[1]

Happy is the student who at an early stage in his studies receives the inspiration of great purpose and the contact of great minds. It is the dynamic of all true education. Linacre took with him to Italy a scholastic grounding in the classics; he brought back with him a living comprehension of the service which pure Hellenism could render to English Medicine, of the essential importance of Aristotle, and of the necessity of a reorientation of medical knowledge as transmitted by the Arabs. The Florentine Academy repudiated Arabist teaching. We must not forget that 450 years ago a training in medicine in Western Europe meant a course of reading and disputation on Hippocrates, Galen, and Avicenna. In the first year the student usually read the first Canon of Avicenna and the ninth book of Rhazes; in the second year the *Ars parva* of Galen, and the fourth book of Avicenna; in the third year the aphorisms of Hippocrates, the works of Dioscorides and Commentaries on Avicenna. Medicine was taught as a branch of philosophy after the style of Averroes. Such a course Linacre had pursued at Oxford and in Italy. He went out a scholar, he returned a doctor of medicine. It was not until the sixteenth century that the study of medicine dealt directly with the body of man and was based upon experimental science.

When Linacre came back to England he settled down again at Oxford, but as a teacher rather than an undergraduate, as a translator rather than a student, as a medical reformer rather than a schoolman. He was incorporated as M.D., and with Grocyn and Lilly he was recognised as one of the pre-eminent restorers of Greek scholarship in England. He was, in fact, the first. He tutored Sir Thomas More, who came up to Oxford in 1499, and about the same time he had an even more distinguished pupil in Erasmus, during his first visit to England. In 1501 he became tutor to the young Prince Arthur of Wales, while temporarily at Oxford, and subsequently he became physician to Henry VIII. This complimentary appointment brought him to London, where he resided at the Stone house, Knightrider-street, near the court at Bridewell, in the vicinity of St. Paul's, and introduced him to a London medical practice, which though limited, was in the highest circles. The routine practice of medicine was in the hands of apothecaries and quacks. In accordance with the custom of the time, Linacre was scholar, physician and priest, and was ordained by his influential patrons to a number of non-residential livings.[2] His priestly duties do not appear to have

[1] See Life of Thomas Linacre. J. Noble Johnson, 1835; and edition of Linacre's Translation of Galen's De Temperamentis. By J. F. Payne. 1881.

[2] These included Rector of Mersham in Kent, 1509; a prebendary stall in Wells Cathedral, 1509; Vicar of Hawkhurst in Kent, 1510; a canonry and prebend of St. Stephens, Westminster, 1517; prebend of South Newbold, York, 1518; precentor of York, 1519; Rector of Holworthy in Devon, 1518; Rector of Wigan in Lancashire, 1520. The Master of St. John's informs me of yet another ordination of Linacre—namely, that of Rector of Freshwater, 1520. The episcopal records of Winchester show that "Thomas Linacre, Doctor of Arts and Medicine," was instituted Rector of Freshwater in the Isle of Wight, August 8th, 1520, and resigned with a pension in 1522. The patrons at the time were the Prior and Convent of Domus Jesu de Bethlehem de Shene. In the seventeenth century the Archbishop of York conveyed the advowson to St. John's College, Cambridge.

interfered with his medical practice, his attendance at Court or his translation of Galen. Linacre's residence in Oxford, before and after his visit to Italy, extended to 21 years, and his life in London covered 23. He died in 1524 in his sixty-fourth year, and was buried in St. Paul's Cathedral, but the monument erected by Caius in 1557, and the grave itself, disappeared in the conflagration of 1666.

English Medicine in the Fifteenth Century.

Medical practice in England in the time of Linacre was Arabic in origin. The Byzantine influence had been authoritative from Bede to the Norman period, and was succeeded by Arabian doctrine until the Reformation. Jews, priests, and Franciscan friars were the leading practitioners. It was reported to Parliament in 1511 that the greater part of these practitioners had neither insight nor learning; and that "they used sorcery and witchcraft to the hurt, damage and destruction of the King's liege people, most especially of those that cannot discern the uncunning from the cunning." The plague and leprosy were the formidable diseases, both favoured by "famine pestilences" due to bad harvests. The lesser maladies of the Middle Ages had in them a large element of hysteria or psychoneurosis, so that faith came not amiss in the course of treatment. The extant leech-craft provided for consumptives, cancers, stone, gout, St. Vitus's dance, epilepsy, catarrh, ague, dropsies and jaundice, fluxes and ruptures, gout and rheumatism. The resources of surgery were few and the instruments simple, but splints were used, heat was applied by cauteries or hot bricks, and it was known how to staunch blood, extract missiles, reduce dislocations, and perform simple amputations. The resources of the native herbals were extensive and, in the sixteenth century, numerous excellent editions of these herbals were published. The physician in Chaucer was grounded in astronomy, and astrological lore played a large part in the times and seasons of treatment as well as its character. The apothecary was of long standing and an earlier representative of medicine than the physician. He was, Bullein said, the physician's cook. Yet he was not guiltless of other and worse deeds, for he was a seller of poisons. He it was whom Romeo sought—

> "I do remember an apothecary,
> And hereabouts he dwells, which late I noted
> In tatter'd weeds, with overwhelming brows,
> Culling of simples; meagre were his looks,
> Sharp misery had worn him to the bones:
> And in his needy shop a tortoise hung,
> An alligator stuff'd, and other skins
> Of ill-shap'd fishes; and about his shelves
> A beggarly account of empty boxes,
> Green earthen pots, bladders, and musty seeds,
> Remnants of packthread, and old cakes of roses,
> Were thinly scattered to make up a show." [3]

In the fifteenth century leprosy was no longer prevalent, but in September of the year in which Linacre left Oxford for Florence (1485) a strange and fatal malady, known as sweating sickness, broke out in London, believed to have been introduced by the mercenary troops of Henry Tudor's expedition landing at Milford Haven. It was like an autumn influenza and did not recur in epidemic form until 1508, then again in 1517 and 1551. It was a subject of correspondence in the letters of More and Erasmus, and Wolsey was one of its victims. It was, of course, hailed as a "new" disease as influenza and certain nervous disorders have been in our own time. The plague, the leprosy, and the sweat proved the necessity of invention of sanitation. In 1388 the first Sanitary Act ever made in England was passed by the Parliament of Cambridge. It followed the earlier sanitary ordinance of Edward III. in 1371, and was succeeded by others in the fifteenth century. Before Linacre's death it had become a national custom, initiated by royal decree, to practise notification of infectious disease, quarantine, the marking of infected houses, and scavenging and sanitary inspection. The medical profession, however, were not yet identified with epidemical observations, sanitation, or preventive medicine. Such patients as they had were among the well-to-do, who needed not public assistance. Linacre left no clinical records of extant disease, though he had ample opportunity. But the same is true of other well-known court physicians of the time. The barbers and chirurgeons were occupied with their lancets, the apothecaries with their alchemy and simples, and the physicians with scholastic learning.

[3] Romeo and Juliet, V., i.

The Domination of the Arabs and Schoolmen.

When Linacre returned from Italy, English medicine was dominated by the Arabic interpretation of science. It was introduced to England not later than the twelfth century by the Jews and by Arabic medical writings, the principal authors of which are familiar to us in the catalogue of the library of Chaucer's physician.[4] Sir Norman Moore has told us that the Arabian medical writings were used also in Ireland in the fourteenth and fifteenth centuries; and Henry VIII. advised Wolsey to take "the pills of Rhazes" as safeguard against the sweat. Throughout Britain it was a time of fossilised Arabism and effete scholasticism, which had remote origins. The century of Islamic invasion of the West (622–733) remains one of the wonders of the world. It started with the conversion and flight of Mahomet; by 640 the Arabs had conquered Egypt and destroyed for the second time the Alexandrian Library. Abdallah and Musa, and their followers, marched across North Africa, capturing the old cities of Carthaginian rule; by 710 Tarik had invaded Andalusia; within 20 years the Moors, having possessed the land of Cordova and Seville, advanced over the Pyrenees to Carcassonne, Narbonne, Avignon, and to Toulouse and Bordeaux; only at the gates of Tours were they stopped by Charles Martel in 733. If he had failed, the history of Europe would have been very different.

Indeed, as it was, the Arab invasion was so penetrative that Jewish and Arabian influence became greater and more insidious even than the march of the Saracen hosts. From the year 750 the Eastern Caliphate flourished for 500 years and the Western, beginning at the same time, for almost as long. In the reign of both, Arabic learning became dominant. It had established itself as the vehicle and channel of Byzantine Greek medicine, which it derived from its ability to assimilate the Syrian and Jewish medicine of the Nestorians.[5] First Gondisapor and then Bagdad, took the place of Edessa—the original Nestorian medical centre before 489—as the principal medical schools of the East and the influence of the great Arabian physicians, Rhazes of Bagdad, Ali Abbas, and Avicenna of Bokara, spread wherever Arabian arms had won supremacy. The Canon of Avicenna became in East and West the text-book of medicine, carrying within its covers an inadequate and miscellaneous account of the learning of Hippocrates and Galen. The University of Cordova was founded in the eighth century and became the Bagdad of the West. Of its leaders Abbucasis translated for Europe the works of Galen and Rhazes, and Avenzoar and Averroes those of Aristotle. The schoolmen of the Middle Ages carried on the tradition. The trouble was that the tradition itself was fallacious. The learning had come through Greek, Syrian, Persian, Arabic, and Latin, and in its translations and retranslations had suffered almost as much as by its Arabic transmutation.

The Arabs brought something of their own. We must not forget, for instance, that the first-hand clinical accounts of small-pox and measles were made by Rhazes in the eleventh century and introduced en bloc into the Western medical literature. The

[4] Peter of Wimbledon, physician to Henry III.'s Queen, Reginald de Stokes of Oxford, Roger Bacon himself, John of Gaddesden and his Rosa Anglica, Bernard of Gordon and his Lilium Medicina, Gilbertus Anglicus, the author of the Compendium, John of Burgoyne (the Sir John Mandeville of Chaucer), John Arderne, the Newark surgeon, John Mirfield and his Breviarium Bartholomei, John of St. Giles, who studied at Montpelier, and was the friend of Grosseteste, were among the exponents of Arabian Medicine in England.

[5] Gibbon's Decline and Fall of Rome, chaps. xlvii. and lxvi.; and Arabian Medicine. D. Campbell. 1926. Vol. i.

Arabs also brought their alchemy, their experiments, their laboratory, their mathematics, optics, and astronomy, their exceptional faculty of deduction, their immense love of learning—all these things enriched their Greek acquisitions. But the acquisitions were overlaid with false conceptions of disease, with a superfluity of drugs, with astrological forecastings, and with their deep and inherent religious dogma, and in this way both the Greek form and its spirit were lost. Thus it came about that Hippocrates was forgotten, Galenical doctrine became a static dogma, and Aristotle was mistaught. Aristotle, the son of a physician, had been the father of biology as well as politics. He first laid down the rule and practice of observing Nature and following her ways. He became, as Dante said, "the master of those who know." He not only based his natural studies on embryology and rendered accurate records of what he found, but he first sought to formulate a basis for devising some laws of nature, on biogenesis, on development, and on physiological division of labour. He was free from magic and speculative "ideas," and eschewing that which was unmeasurable became a "realist." He conceived the universe to be a cosmos. Holding fast by the rules of logic and keeping close to the facts of actual experience, he reached positive results, verifiable by observation and experiment. Dealing with the individual organism, as Hippocrates had dealt with the individual patient, he conceived a system of organic development. Though taught by Plato he avoided teleological or supernatural explanations, and thus led men's minds to naturalism.

The principal Arabic translator of Aristotle was Averroes, of Cordova, whose labours in the twelfth century set a standard which covered Europe. He was known as the Commentator, and his "Colliget" was written about 1190. But the standard was not purely that of Aristotle, but an Averroistic interpretation of Aristotle. For Averroes had been reared in the doctrines of Islam, and interpreted the data of Aristotle from the Mohammedan point of view, derived from the sects of Islam, wholly antithetical to Greek philosophy, and without apprehension of rationalism. Averroes stands therefore always midway between the theology of the schoolmen and the philosophy of the Greek. He summed up his dogma in two cardinal doctrines, the eternity of matter and the world (as distinct from the common belief that the world was about to end) and the theory of the intellect. "The first thing created by God," says the Koran, "is intelligence," and by this term Averroes meant the soul or anima. Renan summarised Averroes for us by saying that he believed in "the eternity of matter; the evolution of the seed by latent force; God infinite and indefinable; laws, nature, necessity, reason; the impersonality of intelligence; the emersion and reabsorption of the individual man after death."[6] It was Omar Khayyam who said:—

> "I sent my Soul through the Invisible,
> Some letter of that After-life to spell:
> And by and by my Soul return'd to me,
> And answer'd 'I Myself am Heav'n and Hell.'"[7]

There is much in Averroes, both ancient and modern, that has stood the test of time, but the denial of human immortality divorced him from Islam as completely as his quasi-rational basis of nature and the eternity of the world separated him from the schoolman of Europe. He died in 1206 no man's friend, for Averroistic Aristotelianism unwittingly confused and misdirected the stream of new thought which Aristotle had originated. Aristotle had found some support in Padua and the Venetian States, but none in the Platonic Academy at Florence.[8] Before the dawn of the Renaissance Florence and Venice represented the two poles of scientific philosophy as of art in Italy. Florence swung in favour of ideals of art and of platonic speculation and philosophy, Padua and Bologna in favour of analysis, rationalism, and the naturalism of Aristotle. Averroes sought to combine both of them, and the schoolmen's transmutations of the Commentator misled Western medicine for 300 years.

But the Aristotelianism of Averroes was but half the problem faced by Linacre and the Oxford Reformers. For there was also scholasticism. It was in the thirteenth century that the English universities first arose, and the impulse created by the Crusades was diverted to the spread of learning. "The long mental inactivity of feudal Europe," said Mr. J. R. Green, "broke up like ice before a summer's sun. A new power had sprung up in the midst of a world as yet under the rule of sheer brute force." The new spirit led to "the great divide" in European scholasticism. The fundamental problem of scholasticism had been the objectivity versus the subjectivity of matter. Those who stood for the former were *realists*, those for the latter were *nominalists*, and for 200 years the battle of words between them had waged fiercely.

> "Myself when young did eagerly frequent
> Doctor and Saint, and heard great argument
> About it and about; but evermore
> Came out by the same door where in I went."[9]

But the emergence of Aristotle's science in Western Europe through the medium of the Arab translators was revolutionary. Until the beginning of the thirteenth century Aristotle had been known to the schoolmen only by his logic. From the advent of his science sprang a new impulse, and the ascendancy of the schoolmen of the early scholasticism, Roscellinus Abelard, and Peter Lombard gave way to that of the later scholasticism of Albertus Magnus and Thomas Aquinas the Dominicans, and of Ockham, Duns Scotus and Roger Bacon, the Franciscans. Too many of the translators of Aristotle had an imperfect knowledge of Greek as they had of the groundwork of science. Nevertheless the Toledo school of translators and many stray reporters transmitted and magnified the work of Aristotle in the western world. Thus Roger Bacon himself was stimulated. Though a schoolman he was progressive and became a true Aristotelian, the Father of the scientific method in England. His legacy was accuracy of method, criticism of authority, reliance on experiment. He also stood for the unity of truth. "All the sciences are connected," he said; "they lend each other material aid as parts of one great whole, each doing its own work, not for itself alone, but for the other parts." Two centuries before the Renaissance he declared that the whole course of man's intellectual development was not multiple but one, not discrete or detached, but continuous and interdependent. For Roger Bacon there was no Arabic breach. The Nestorian and Mohammedan schools of science in East and West were, to him, not only channels of Greek learning, but treasure houses which enriched it. "His aim," says Dr. John Bridges, "was induction leading to deduction, in order to construct."[10]

LINACRE AS TRANSLATOR OF GALEN.

This, then, was the world of Linacre. There was the domination of Arabian medicine and there was the thraldom of the schoolmen. The fallacies of both stood in the way of progress and were awaiting reform. As we have seen, active medical practice occupied but a small part of Linacre's work after his return from Italy. Fifteen years were spent at Oxford before he removed to Bridewell about 1503, and 20 more years remained to him. Both at Oxford and in London he devoted the major part of his time to grammar and translations, and this was his first great contribution to the Renaissance. But it was not merely scholastic; it was purposive. It was designed to bring men's minds back to Aristotle. Stimulated by Barbarus, Linacre's ambition was to coöperate with Grocyn and Latimer in translating the extant writings of Aristotle direct from the Greek; as this joint task proved impracticable he assisted

[6] Averroes et l'Averroisme. E. Renan. 1852.
[7] Rubaiyat, lxvi.
[8] Science and Mediæval Thought. T. C. Allbutt. 1901.
[9] Rubaiyat, xxvii.
[10] Life and Work of Roger Bacon. J. H. Bridges. 1914.

in preparing the famous Aldine edition of Aristotle 1497, and gave himself to translations of Galen. For Galen was a medical interpreter, whose writings were already in general use and acceptance; they constituted perhaps half of all surviving Greek medical literature, and covered every branch of medicine. The Hippocratic spirit was inadequately conveyed as the teleological explanations were overdone, blemishes in part responsible for the survival of Galen's books. But Linacre was a practical reformer, and by translating Galen he saw he would give to the English medical practitioner a vade mecum of immediate value, free from Arabic mistranslation and theological bias. He selected first, on the suggestion of Erasmus and as the basis of other works which he hoped to translate, Galen's treatise on *the preservation of health*, its foundation in nature, its art, its purpose, its priority over therapeutics. Then he took up Galen's *method of healing*, which was followed by his books on temperaments, on symptomatology, on the pulse, &c.[11] Thus he was responsible for six important works of Galen, that on the temperaments printed at Cambridge in 1521 being one of the first books printed here, and possibly the first in Greek type. Linacre was grammarian, humanist, priest, and scholar-physician rather than practitioner of medicine, and he used the printing press, as Albrecht Dürer used his engraved blocks, to cover Europe with his ideas. By this means he taught as grammarian the exact use and connotation of words, took men back to the original sources of scientific literature, and silently appealed for the use of reason instead of mere authority. Though his lesson-book on grammar prepared for Dean Colet's school at St. Paul's failed to meet with approval in England, and his translation of the "Sphæra of Proclus," the Alexandrian neoplatonist, was little more than a curiosity, his scholarly translations of Galen changed the direction of the schoolmen and countered the effect of the Arabian domination. They were more valuable than the Arabian translations, less petrifying and static, more inspiring and potential, and destined to open the new book of the science of anatomy and physiology. Galen himself was less Galenical than the Arabs had made him, and Linacre's translations removed the reproach which medicine derived from the blemishes of its Arabic form and contributed to the introduction of the Hippocratic spirit. Haller attributed the advance of human anatomy in the sixteenth century to the revival of humanistic learning and the invention of printing. Within a generation after Linacre's death the whole conception of human anatomy and physiology had changed in the medical schools of Europe, and your own Charles Creighton in his classic "History of Epidemics in Britain" said that such translations as those of Linacre opened the way a century later to the standard clinical contributions of Willis, Sydenham, and Morton. Linacre's aim was to revive medicine with Greek learning from its pure source in the same way as literature and philosophy was reviving from the Renaissance of the classics. Inspired at Florence as a Platonist, he became the forerunner of Aristotelian medicine in England, and the principal initiator of the scientific movement which was the turning-point in modern medicine.

Foundation of the College of Physicians.

But the turning-point could not be reached only by translations of ancient learning. New learning must be acquired, a new orientation of English medicine other than Arabic must be established, a new spirit such as had awakened Italy must be sought and found. Though a generation had passed since Linacre returned from Florence and Padua, he had not forgotten the energising effect of the close personal contact with great minds, nor could he ever escape from his own profound conversion of mind and heart, a transformation which had been steadily confirmed by the passage of events. The world itself was larger. Since Linacre was in Italy, Columbus had discovered America, Vasco da Gama had rounded the Cape, Ferdinand had driven the Arabs from Granada and the Moorish Kingdom in Spain was extinct, Luther had nailed his theses to the church door at Wittenberg, and Thomas More had published his "Utopia." We must not think of Linacre only as grammarian and humanist; he was like his friends, a man of affairs, and his business was to reform English medicine. He knew of its plight and chaos; he knew it was not a distinct profession and that medical practice was little better than an empirical, illiterate, and mechanical art; having by his translations of Galen given it the means of the new learning, he set to work to devise a method for its organisation. We do not know what share, if any, Linacre had in the passage of the Medical Act of 1511, but it is certain that it stirred him to action. That Act was the second great step to medical reform after the Charter of the Barber Surgeons in 1461. It provided that no one should practise as physician or surgeon in London or within seven miles of its walls except he be examined and licensed by the Bishop of London or the Dean of St. Paul's with the aid of competent doctors of physic as assessors, and that in the provinces the duty of licensing medical practitioners should rest similarly with the Bishop of the diocese. This was better than the previous unlicensed confusion, but Linacre desired to liberate medical practice from the control of the church as well as to lead it into the paths of Plato and Aristotle and the freedom of Hippocrates. In a word, he saw that what was needed was the endowment of medical lectureships at Oxford and Cambridge, and the establishment of a central academy of medicine, which should be charged with the duty, foreseen by Frederick II. in the thirteenth century, of licensing physicians who were medically competent and whose education had been based upon literature and philosophy. This was the origin of the foundation of the Linacre lectures at Merton and St. John's for the public exposition of Hippocrates and Galen, and in September, 1518, by royal letters patent, a Charter was granted by Henry VIII. to Linacre and five other physicians for the foundation of the College of Physicians of London and for the regulation of the practice of physic in London and for seven miles round, and the punishment of offenders. Four years later these privileges were confirmed by statute and extended to the whole country. Linacre became the first President of the College from 1518 until his death in 1524; to his munificence its establishment was due, and in his house its meetings were first held.

Beside the ostensible object of providing a statutory and scientific basis for qualification in medicine the College of Physicians exerted a powerful influence on its science and art. It liberated it from the control of the Church; it exempted it from the leaden rule of orthodoxy which dominated the universities; it brought the competent medical practitioner into the learned world; it encouraged English physicians to study in the universities of Europe and brought foreign physicians into English culture; it was the first systematic plan of education prescribed in England for a faculty of medicine. Out of it great things were to come.

> "The congregated college have concluded
> That labouring art can never ransom Nature
> From her inaidable Estate."[12]

Within a century it had built for itself a comprehensive institution for scientific advancement comprising anatomical and special lectureships, a physic

[11] Linacre's published translations were as follows: Proclus de Sphæra (Aldus Manutius, Venice), 1499; Galeni De Sanitate Tuenda (Rubens, Paris), 1517; Galeni Methodus Medendi, vel de morbis curandis (Maheu, Paris), 1519; Galeni Pergamensis De Temperamentis (Siberch, Cambridge), 1521; Galeni Pergameni De Naturalibus Facultatibus (Pynson, London), 1523; Galeni Pergameni De Pulsuum Usu (Pynson), 1523; De Symptomatum Differentus Et Causis (Pynson), 1524; Rudimenta Grammatices (Etienne), 1533; De Emendata Structura Latini Sermonis (Pynson), 1524.

[12] All's Well that Ends Well, II., 1.

garden, a museum, a library, and the publication of the London Pharmacopœia for the standardisation of drugs.

The Beginnings of the British Pharmacopœia.

The letters patent granted by Henry VIII. which constituted the College of Physicians were confirmed by an Act of Parliament in 1523, which particularly provided for the supervision and scrutiny of every kind of medicine prescribed by physicians practising within the City of London and a radius of seven miles thereof. The means proposed for such supervision was that certain persons appointed by the College should be authorised to enter the premises of all apothecaries and destroy any defective drugs found there. They were to be assisted by the Warden of the Mystery of Poticaries within the City, and a few years later the College invoked the aid of the Warden of the Grocers. A hundred years later, in 1618, some of these powers were also conferred separately on the apothecaries, and this was confirmed by the Apothecaries Act of 1815. This idea of Linacre and his friends was new to English medicine, though it had ancient Arabic origins. Thus was introduced for the first time in this country the principle of pharmacological control of substances used for the treatment of disease. The records of the College show that the publication of a Pharmacopœia under its auspices was discussed in the sixteenth century; but it was not until 1618, 75 years after the Nuremberg *dispensatorium* of Valerius Cordus and a century after the foundation of the College, that the first London Pharmacopœia was issued. It was dedicated to James I. and proclaimed by a Royal Proclamation which required, charged, and commanded all apothecaries not to compound or make medicines in any other manner than that authorised. This first London Pharmacopœia included more than a thousand articles, "many of an extraordinary and even revolting character," and 900 preparations and compounds.[13] The ancient pharmacopœias of the College of Physicians were the forefathers not only of the modern pharmacopœias, issued since 1862 by the General Medical Council instead of the College, but they were also the parents of the famous series of Acts of Parliament which in our own time have dealt with the sale of food and drugs, the regulation of pharmacy and poisons, and the subsequent control of foods, dangerous drugs, and therapeutic substances. The Therapeutic Substances Act, 1925, and its Regulations passed by Parliament last year, which for the first time provide for the standardisation of biological as distinct from chemical drugs, are the direct and youngest descendant of the first Pharmacopœia of the College of Physicians, which arose out of Linacre's far-seeing though primitive supervision of the drugs and medicines used by physicians and apothecaries at the time of the Renaissance.

The private library of Linacre was the nucleus and foundation of the College library which became the repository of many precious legacies from William Gilbert, Matthias Holbosch, Sir Theodore Mayerne, Lord Dorchester, Selden (who left his Arabic medical manuscripts), Elias Ashmole, Matthew Baillie, Harvey, and others. It became a storehouse of the literary masterpieces of medicine, and though much was destroyed by the Fire of London in 1666, much remained.

The "Anatomy Lectures" were delivered on the Italian model from an early period in the history of the College, and about the middle of the sixteenth century dissection of the body was performed. The annual Harveian oration exhorting the Fellows of the College "to search and study out the secrets of Nature by way of experiment, and, for the honour of the profession, to continue in mutual love and affection among themselves," began in 1656, the year before that of Harvey's death. It was established and endowed by Harvey, was to be accompanied by a feast, and in after days became in large degree commemorative of Harvey himself. The Lumleian surgical lectureship was first established by Lord Lumley and Dr. Richard Caldwell in 1581; the Goulstonian lectureship in pathology in 1635; and the Croonian physiological lectures began in 1749.

Linacre's Early Successors.

More germinal than the actual achievements of the College has been the Greek spirit it embodies. Linacre was not himself an investigator or research worker, but he was the introducer of the spirit of the Renaissance to English medicine, and he designed his College for its growth and cultivation. During the last few years of Linacre's life there was a Fellow of Corpus Christi, named Edward Wotton, who followed in the footsteps of Linacre in the study of Greek at Oxford and medicine at Padua. He became President of the College in 1541 and was the first of the English physicians who applied themselves to the Aristotelian principles of biology. Gesner and Haller spoke well of him, and his text-book was the first printed book on zoology by an Englishman. It contains much from Aristotle and Pliny. There followed him in the presidential chair Dr. John Clement, Cardinal Wolsey's Professor of Greek at Oxford. He had been brought up in the household of Sir Thomas More, to whose children he was tutor. Like Sir William Butts, Dr. Chambre, Dr. Fryer, Dr. Huicke, and Dr. Owen, who became distinguished Fellows of the College, he was associated with the court of Henry VIII. and carried on the Linacre tradition. The essence of that tradition was embodied also in John Caius, of this University, who qualified as M.D. at Padua in 1541 and became Professor of Greek there for two years, being paid by noble Venetians to discourse upon Aristotle. He was a zealous collector of Greek manuscripts in Italy, and modelling himself on Linacre he was a translator of Galen, an editor of Celsus, and one of the first classical scholars in Europe. When at Padua he lived for eight months with Vesalius and caught from him his great method of anatomical teaching, which Caius first introduced into this country by his lectures in the hall of the Barber Surgeons shortly after his return from Italy. He was also, in one respect, a clinical observer as well as anatomist and naturalist, for he wrote the first account of the sweating sickness of 1551 from his experience of the outbreak at Shrewsbury. He was the refounder of Gonville Hall as Gonville and Caius College, of which he became Master in 1559, and he built the four College gates of Humility, Virtue, and Wisdom, which led to that of Honour. For nine years he was President of the College of Physicians. "The effects of Linacre's teaching," wrote Sir Norman Moore, "are shown in the life of Caius. Both men in their humility, their love of learning, their public and private generosity, are examples which have affected English physicians ever since."[14]

When Caius was living with Vesalius at Padua there was born at Colchester the man who is described by Lord Bacon as "the father of experimental philosophy" in Britain. This was William Gilbert, the illustrious author of "De Magnete." He had studied, like Linacre, in Italy for two or three years. He was a Fellow of St. John's, an M.D. of Cambridge, and became physician to Queen Elizabeth. He employed the leisure from his London practice in investigation into what he called "electrics," a property not only of amber, but of glass, rock-crystal, diamond, sulphur, and sealing-wax. This was the beginning of the use of the term "electricity" and the scientific foundation of magnetism which had been known since the thirteenth century. In 1600 he was President of the College and in the same year published his famous book of inductive philosophy, which records his numerous experiments and discoveries over 18 years. The reading of this book turned Galileo's mind to magnetism. A legacy in Gilbert's will showed his devotion to the College:—

> "Item. I geve to the Colledge of Phisitians in London all my bookes in my Librarye, my Globes, and Instrumentes, and my cabinet of myneralles,"

[13] Munk's Roll of the College of Physicians, iii., 371–392.

[14] The History of St. Bartholomew's Hospital, 1918, ii., 407–420.

and in a parting legacy he remembers its Fellowship too—

"Item. I geve sixe poundes thirteen shillings foure pence the next quarter daye after my deathe to be bestowed by the Treasurer of the Colledge to make them a dynner." [15]

The greatest ornament of the College of Physicians and of English medicine also hailed from Cambridge, for William Harvey was at Caius College in 1593. Like Linacre he had spent his school days at Canterbury, and like him he took his degree at Padua (1602). He was physician to St. Bartholomew's Hospital and physician to the King. In 1615 he was appointed Lumleian lecturer at the College of Physicians, and his autograph notes of his first lectures in 1616, six days before Shakespeare died, are in the British Museum. They show not only the width of Harvey's classical knowledge, but also contain his first pronouncement of his discovery of the circulation of the blood, which was subsequently published in his immortal book, "De Motu Cordis" in 1628. He conquered envy in his life time, as Hobbes said, and lived to see his new doctrine established. He was a munificent supporter of the College to which he was devoted and to which he left his library.

Linacre, Clement, Wotton, Caius, Gilbert, and Harvey represent the kind of learning and the spirit of inquiry for the advancement of which the College of Linacre was founded. In the first century of its existence it brought together in a unified integration the constituent elements of the science and art of healing, the exposition of which was subsequently exemplified in Linacre's illustrious descendants, Glisson, Sydenham, Willis, and your own Heberden. To the philosophy of the ancients the College added a wider understanding of biology and physics; it introduced the natural study of anatomy and physiology; its pharmacopœia began systematic pharmacology and therapeutics; its observant practitioners opened the doors of clinical medicine; and Linacre's College of Physicians became the sole guardian of medical learning and education in England. It was humanist in origin but forward-looking in vision; it began as a corporate fellowship, but became the great mother school of English medicine; it sprang from ancient learning, but grew into the study of Nature and obedience to her laws; it echoed back to the Greeks, but called men forward to a new time and a new birth, passing away from textual and literal form to the larger occasion of the living purpose and spirit of the great masters.

The Oxford Reformers.

As the restorer of Greek learning in England Linacre exerted a remarkable influence upon the men of his time. He had distinguished pupils and friends. On the occasion of his first visit to England Erasmus was evidently impressed with the group of men who afterwards became known as the Oxford Reformers. We all remember his letter to Fisher: "When I listen to my friend Colet," he wrote, "it seems to me like listening to Plato himself. In Grocyn, who does not admire the wide range of his knowledge? What could be more searching, deep and refined than the judgment of Linacre? Whenever did nature mould a character more gentle, endearing and happy than Thomas More's?" [16] Sir Thomas More and Erasmus, whose famous translation of the New Testament was published in 1516, were among Linacre's pupils; Grocyn, the first teacher of Greek at Oxford, who followed the Peripatetic School, and Colet, who became Dean of St. Paul's, were his colleagues at Oxford; and Latimer and Lilly also shared his Greek studies. In after days, and before More had settled in Chelsea, several of them lived near each other in the vicinity of St. Paul's and the Charterhouse, engaged in different spheres in bringing about the English Renaissance from scholasticism. They stimulated each other, shared in each other's labours, marked each other's lives. In the church and in the State, in scholarship and in medicine, the Oxford Reformers emancipated English thought. They discussed the reform of education, the amelioration of the evil social conditions of the people, the means and methods of propagating the Greek spirit in England. Their society was a Platonic academy, and out of it grew More's "Utopia." "The Utopia will be found," says Mr. Seebohm, "to be in great measure the expression of the views of the little band of friends on social and political questions." [17] It is inspired, he adds, by "a fearless faith in the laws of nature combined with a profound faith in religion." Nor was it merely a matter of confidence. Before he became Lord Chancellor, More himself had been appointed by Parliament a Commissioner of Sewers, and at his side there was the greatest living authority on the compendius hygiene of Galen. As a member of a group of practical reformers Linacre, too, brought the genius of the group to the solution of his problems. There is in his work unmistakable signs of the humane statecraft of Sir Thomas More, the Catholic religious liberty and piety of Dean Colet, the cosmopolitanism and wide learning of Erasmus. Above all, there is the inspiration of Barbarus. It would almost seem as if Linacre modelled his life on this extraordinary man whom he met so casually in Rome. Barbarus gave him a mode and perhaps a standard of life for the regular student, turned his scholarly mind to medicine, and confirmed him in the mission of Aristotle. Sir William Osler used to say that a physician "may possess the science of Harvey and the art of Sydenham, and yet there may be lacking in him those finer qualities of heart and hand which count for so much in life. Medicine is seen at its best in men whose faculties have had the highest and most harmonious culture"; and thus he says many of the greatest physicians have influenced the profession "less by their special work than by exemplifying those graces of life and refinements of heart which make up character . . . these have been the leaven which has raised our profession above the dead level of a business." [18] Of these Linacre was one. Whether it was the flower of inborn character or contracted from his brilliant friends or otherwise acquired, his personality comes down to us across 400 years with an aroma and a virility alike creative, winsome and enduring.

The Foundations of Modern Medicine.

By piecing together the scanty records which remain to us of Linacre's personality and achievements—his translations, his institutions, and himself—we shall find that like Petrarch he stood "on a frontier that divides two peoples, looking both to the past and to the future." As a humanist he followed where others had trodden. He joined with them in awakening the spirit of man to his literary inheritance. Though a medical practitioner in a pregnant time, he did not elucidate the processes of diseases; the great epidemics seemed to pass him by; he left no original work. But what he did as humanist and scholar-physician was, by adding to the heritage already there, to make possible the fuller interpretation of the Greek spirit. Though he did not himself even share in the consequent reconstruction, he laid the foundations on which we build, he sowed the seed of which we garner the fruit. "The medieval heritage of Greek science and the Renaissance heritage of Greek literature," says Singer, "proved barren of themselves. It was not until the one fertilised the other than there was real and vital growth." [19] That fertilisation was the work of Linacre and the Oxford Reformers; to carry on that work is their legacy to us. Their principal secular work which remains to us is More's "Utopia." It is almost a textbook of elementary statecraft and preventive medicine.

[15] Gilbert, Physician, Silvanus P. Thompson, 1903.
[16] The Oxford Reformers, F. Seebohm, 3rd ed., 1896, p. 115.
[17] Ibid., pp. 347–390.
[18] Life of Sir William Osler, Harvey Cushing, 1925, i., 459.
[19] The Dark Ages and the Dawn (Singer), chap. v. of Science and Civilisation, 1923, p. 149.

"None who read the 'Utopia,'" wrote Sidney Lee, "can deny that its author drank deep of the finest spirit of his age. None can question that he foresaw the main lines along which the political and social ideals of the Renaissance were to develop in the future. . . . By the precept and theory of his "Utopia," More cherished and added power to the new light." [20] His friend and preceptor Linacre was the first physician to make practicable the ideas of Roger Bacon in English medicine. He could not, or did not, himself practise them, but he implemented them within the limitations of his day; and the spirit of his institutions has expressed itself in four centuries in such way and form as to give us our present apprehension of the splendour, the amplitude, and the vast scope of the science and art of medicine.

If it be permissible to attempt a generalisation it might fairly be said that four advances in English medicine are indirectly attributable to Linacre's initial influence. In the sixteenth century the Renaissance carried with it a return to Aristotle and to Nature; the previous expansion of anatomy under Vesalius culminated in the seventeenth century in the fuller understanding of physiology under Harvey; the great naturalists and medical practitioners of the eighteenth century, of whom John Hunter was chief, brought into application the new physiology and pathology in searching for the actual causes, circumstances, and natural healing of disease; and the nineteenth century from beginning to end was the period of the organisation of the profession of medicine, both by itself and by the State, for the welfare of the Commonwealth, an organisation initiated by the College of Physicians. None of these four immense steps in human progress was narrowly confined to the period of its introduction, and indeed the twentieth century embodies them all. If we ponder upon this amazing series of events we shall find in it not only the aftermath of the Renaissance, but the philosophic basis and object of medicine itself. The fundamental purpose of medicine is not to cure disease but to prevent it. Even Linacre and Sir Thomas More knew that the future well-being of the English people lay with simple methods of prevention. Yet the practice of that prevention is still widely disregarded. "In the world of Nature," said Balzac, "the methods are very simple. It is the result that is great."

The Oxford Reformers and their successors down to Harvey seem to say to us: "Follow the Greek spirit, search out the secrets of nature, find out by the experimental method her laws, and be obedient to them." That is the true science and the only wise statesmanship. It cannot be doubted that Jenner, Pasteur, Lister, and Allbutt would have said the same. It is this mode of approach which has given us: (*a*) the return to Nature, (*b*) the application of physiology, (*c*) the new knowledge of the cause and circumstance of disease and its healing by immunity, and (*d*) the organisation of science in behalf of the survival and development of man. These, and not the particular methods of their application, are the essential principles of preventive medicine. The ways and means of its practice and organisation will be manifold and diverse; some will be discharged by the physician, some by the layman, some by the community. Our path will take us into all fields of knowledge and all spheres of human society. We shall work in Aristotle's double track of the one into the many and the many into the one.

> "It may be that the gulfs will wash us down:
> It may be we shall touch the Happy Isles."

In spite of Linacre and the greater explorers who followed in his train, we in England have been slow to learn the lesson of the Oxford Reformers that only by the growth of mind and soul is a nation great and free, only by seeking the truths of Nature and integrating them into a unity can we rightly belong to the kingdom of life.

[20] Great Englishmen of the Sixteenth Century. Sidney Lee. 1907, p. 33.

RADIUM TREATMENT IN CARCINOMA OF THE MOUTH AND TONGUE.

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DURING my first year at the Radium Institute 127 out of a total of 565 cases of malignant disease referred for treatment were suffering from carcinoma of the mouth and tongue. At the end of the year 16 per cent. of these patients were free from evidence of either local or metastatic disease, but subsequent examination of all the patients treated showed that the results were very sporadic and that a very trying reaction usually accompanied treatment. Needless to say, most of the cases were frankly inoperable, but the same applies to the majority of cases of buccal carcinoma seen in hospital practice. About 50 per cent. of the cases referred for treatment by radium are in the last stages of the disease. Often half the entire buccal cavity is involved and the tongue absolutely fixed, whilst metastatic deposits, also frequently fixed to the great vessels, are found on both sides of the neck. At the moment no attempt is made to treat this type of case.

Evolution of Technique.

In taking charge of treatment at the Manchester and District Radium Institute two and a half years ago I felt, therefore, that the problem of the treatment of this variety of malignant disease was a fairly pressing one. There seemed to be no doubt that a number of cures could be obtained, but with the methods in use results were uncertain. In an attempt to arrive at some common principle the records for a period of ten years were examined. The cases were under the care of Dr. Arthur Burrows. It was found that 51 out of a total of 812 cases were well for periods of time varying from one to nine years. It was impossible to compare the results with those of surgery, as practically all the cases were surgical rejects, but the fact that radium could accomplish that which surgery, with its comparatively perfected technique, could not, was impossible to ignore. The main point of the investigation was that in 80 per cent. of these apparent cures the method employed had been that of burying small, unscreened emanation tubes or seeds in the primary growth. These tubes are left in situ and are probably effective for about 14 days. Both β and γ rays are employed, but the common factor is a comparatively small dose per unit of application continued for a long period of time. The other methods previously employed consisted in the implantation of screened tubes for periods up to 24 hours. The tube strength varied from 10–12 millicuries per linear centimetre, and the screening from 0·3 mm. of brass to 0·3 mm. of platinum. The former screen allowed far too much β irradiation to pass through, and often caused a very painful and distressing reaction. The same criticism applies to the unscreened method—only more so. On the other hand, the method did produce results and, if the end justifies the means, can be condoned. It had a great vogue in America.

About the same time Régaud,[1] in a paper read before the first International Congress of Radiology in London, referred to results in carcinoma of the tongue which were frankly brilliant and, although I have not had the opportunity of seeing his work, I should like to pay tribute to him as a pioneer in this subject. He applied the principle of prolonged irradiation with a buried tube technique, but avoided the disadvantages of sloughing and necrosis by heavy filtration—viz., 0·5 mm. of platinum, which gives almost a purely γ type of irradiation. Hitherto at the Manchester and District Radium Institute emanation only had been used, but in view of the possibility that it might be better to use a source of irradiation of constant strength, two series of tubes containing radium